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## SYSTEMATIC BASIS FORMATION FOR SYNTHESIZED CAPITAL

*The article generalizes the current approaches to definition of intellectual, human and social capital as components of synthesized capital. The structure of synthesized capital is proposed.*

*Keywords: synthesized capital; human capital; intellectual capital; social capital.*

## Наталія Л. Гавкалова, Тетяна А. Власенко ФОРМУВАННЯ СИСТЕМНОГО БАЗИСУ СИНТЕЗОВАНОГО КАПІТАЛУ

*У статті узагальнено підходи до визначення інтелектуального, людського та соціального капіталів як складових синтезованого капіталу. Запропоновано структуру синтезованого капіталу.*

*Ключові слова: синтезований капітал; людський капітал; інтелектуальний капітал; соціальний капітал.*

*Рис. 2. Табл. 3. Літ. 40.*

## Наталія Л. Гавкалова, Татьяна А. Власенко ФОРМИРОВАНИЕ СИСТЕМНОГО БАЗИСА СИНТЕЗИРОВАННОГО КАПИТАЛА

*В статье обобщены подходы к определению интеллектуального, человеческого и социального капиталов как составляющих синтезированного капитала. Предложена структура синтезированного капитала.*

*Ключевые слова: синтезированный капитал; человеческий капитал; интеллектуальный капитал; социальный капитал.*

**Problem setting.** Ukrainian society is passing through the new stage of its evolutionary development which can be explained by revolutionary innovations and modernization of all spheres. Such a dynamic development can result in emergence of new terms, innovation decisions and construction of new models for society management.

Economic theory is also experiencing qualitative changes associated with new concepts the basis of which are complexity and consistency. "Synthesized capital" is a new economic category which has arisen on the basis of intellectual, human and social capitals by which its complexity can be explained.

Introduction of this term into economics allows solving a number of contradictions between three abovementioned types of capital because all these types concern a human being, his development, social life and interaction with other members of society, creation of new innovation products as a result of labour intellectualization and development of an employee as a personality.

General and particular in each type of capital give us an opportunity to consider the notion of "synthesized capital" from the position of traditional critical analysis, i.e. tools for creation of logical conceptual apparatus. Thus, the formation of conceptual apparatus of "synthesized capital" notion and its structure is very topical.

**Recent research and publications analysis.** Synthesized capital is a new economic category that emerged at the intersection of intellectual, human and social capi-

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tal, due to their complexity. Emergence of "synthesized capital" category in economic science can solve fundamental contradictions between 3 types of capital, which do not have the definite interpretation of the components in each, since they all are to some extent related to employment with an appropriate focus on people interaction in society, creating new innovative products as a result of labor intellectualization and employees general development. The practicality of synthesized capital at the macrolevel and its accumulation at both meso- and macrolevels determine the relevance of this study.

Researches on synthesized capital were carried out by many scientists such as O. Amosov and N. Gavkalova (2013), N. Gavkalova and M. Barka Zine (2012), T. Kaminska (2012), T. Kaynova (2011) and many others. Despite some developments, the theory of synthesized capital is still at its formation stage and requires further in-depth studies.

**The research goal** is to determine the structure of synthesized capital as its systemic basis.

**The research object** is the process of synthesized capital formation.

**The research subject** is theoretical foundations, methodological approaches, guidelines for creating synthesized capital basis. The fundamental problem to be solved is to eliminate conflicts in the existence of human, intellectual and social capitals.

The solving of the article's problems will provide new knowledge in the field of synthesized capital.

**The research methods** are complex analysis, theoretical synthesis and abstract logic methods.

**Key research findings.** Since this economic category is a new one, the development of its methodological support is also at the formation stage. So most attention requires the development of systematic basis, which gives an opportunity to consider the investigated category as a scientific one, to develop managerial tools, to evaluate the factors of influence and to establish the socioeconomic mechanism of synthesized capital efficiency.

To develop a systematic basis for synthesized capital it is necessary to consider it in terms of system analysis. Under this approach, system is regarded as a sufficiently varied one: as a set of interconnected elements, and as a design and development of a certain set of methods and tools that a researcher or a developer applies for a particular purpose, and as a general research methodology and phenomena related to certain branch of human knowledge. An important feature of a system is the unity of purpose of its components or elements (Sharapov et al., 2003). Note that element is a part of a system that is not a subject to further separation of lower level, which means that it serves as a final level of system decomposition. So one should consider intellectual, social and human capitals not as elements but as subsystems or components of synthesized capital. The level of decomposition depends on the purpose of analysis. The classic definition of a system as proposed by L. von Bertalanffy (1969) (the founder of the general systems theory) is a complex of interacting elements that have certain relations with each other and with the environment. The definition of unity of purpose components that form the system should also be added.

All the categories studied are types of capital. Capital is one of key economic categories. Taking into account the considerable achievements of foreign and domestic

scientists regarding the nature of capital, among which the most famous are K. Marx (2013), A. Smith (2007), A. Marshall (2007), L. Walras (2014), A. Chukhno (2002), let us make a generalization of capital. It is an appropriate margin benefit in the form of tangible or intangible (more typical for synthesized capital) assets, the main purpose of which is participation in the production process for making more profit.

Special attention should be paid to the relationship between the studied categories, which are the integral parts of a system and determine its properties and functions. For their characteristics it is necessary to define the nature of each and determine their structure. To identify the links between the studied categories it is necessary to define the basic characteristics of each concept. The key characteristics of human capital are given in Table 1.

*Table 1. Key features of human capital, authors' development*

Key features	Authors
Formed by investing knowledge, skills, experience of an individual	G. Becker (1993), O. Borodina (2003), G. Bowen (1978), S. Dyatlov (1996), V. Kutsenko and G. Evtushenko (1999), L. Mikhailova (2003), R. Nureev (2009), J. Poplavska and V. Poplavski (2002), T. Shults (1995)
Combination of innate abilities	G. Becker (1993), O. Borodina (2003), L. Mikhailova (2003), T. Shults (1995)
Motivations	G. Becker (1993), G. Bowen (1978), S. Dyatlov (1996), R. Nureev (2009)
Increase of income level (individual, enterprise or society)	G. Becker (1993), O. Borodina (2003), S. Dyatlov (1996), L. Mikhailova (2003), J. Poplavska and V. Poplavski (2002)
Acquired through education, health promotion	O. Grishnova (2006), E. Dolan and D. Lindsey (1992), J. Poplavska and V. Poplavski (2002), S. Strumilin (1982), T. Shults (1995)
Intellectual abilities	E. Dolan and D. Lindsey (1992)
Quintessence of competitiveness	G. Greyson and K. O'Dell (1991)
Power	H. Bowen (1978), R. Nureev (2009)
Increase of efficiency and productivity	S. Strumilin (1982), S. Dyatlov (1996)
Productive qualities	R. Nureev (2009)
Production of economic goods	H. Bowen (1978), R. Nureev (2009)
Participation in production process	O. Borodina (2003)
Intellectual work	J. Poplavska and V. Poplavski (2002)

Hence, human capital can be characterized as follows: knowledge, skills, experience, abilities and motivation of employees, natural abilities, workers health, which are formed by investing in training and education. The use of human capital aimed at producing goods and services should enhance competitiveness, increase revenues for both individual employee and an enterprise.

Similar generalization should be made for intellectual capital. Table 2 gives its key characteristics.

Thus, intellectual capital should be considered as a combination of accumulated intellectual resources as a result of knowledge accumulation, its organization and transfer, as well as its institutionalization in the form of intangible assets. Legal institutionalization of intellectual capital acquires the status of intellectual property. An

important feature of intellectual capital is the possibility of its spread at an enterprise through information networks, organizational structure and culture.

*Table 2. Key features of intellectual capital, authors' development*

Key features	Authors
Human knowledge (academic and vocational skills), knowledge bases and their transfer, "collective brain"	N. Gavkalova (2007), V. Inozemtsev (1998), B. Leontjev (2002), K. Melamyuka (2000), I. Roose (1998), T. Stuart (1998), K. Taylor (2001), A. Chukhno (2002)
High market value	K. Melamyuka (2000), I. Roose (1998)
Structural capital	L. Edvinson and M. Melone (1999), N. Gavkalova and N. Markova (2006)
Intelligent material, formalized and recorded	D. Klein and L. Prusak (1999), B. Leontjev (2002)
Production of more valuable property. Creating added value	D. Klein and L. Prusak (1999)
Intangible assets of a company	E. Brooking (2001), K. Taylor (2001)
Organizational structure	N. Gavkalova (2007), K. Taylor (2001), A. Chukhno (2002)
Intellectual property and rights	E. Brooking (2001), N. Gavkalova (2007), V. Inozemtsev (1998), O. Kenduhov (2003), B. Leontjev (2002), K. Taylor (2001), A. Chukhno (2002)
Market, human and infrastructural assets	E. Brooking (2001)
Useful relationships with other entities (client assets)	N. Gavkalova (2007), B. Leontjev (2002)
Ensuring competitiveness	T. Stuart (1998)
Combination of individual abilities	S. Klimov (2000), B. Leontjev (2002)
Information networks	V. Inozemtsev (1998), A. Chuhno (2002)
Image of an enterprise	V. Inozemtsev (1998), A. Chuhno (2002)
Organizational culture, communication	N. Gavkalova (2007), V. Inozemtsev (1998), A. Chukhno (2002)
Intellectual work	A. Chukhno (2002)
Intellectual resources (machine intelligence)	N. Gavkalova (2007), O. Kenduhov (2003)

The last component of synthesized capital is social capital. Its key characteristics are presented in Table 3.

In general social capital is considered by researchers as a resource of employees' interaction ensuring information and knowledge exchange (or transfer) for better coordination and cooperation of production processes. Such interaction is implemented through social networks, norms, rules, beliefs and trust.

Figure 1 provides a block diagram of synthesized capital, singling out the key characteristics of human, intellectual and social capital and the purposes to which it is focused.

As shown in Figure 1, majority of structural parts are closely interrelated, thus determining the binding nature of synthesized capital.

Knowledge, skills, experience in the context of human capital is human knowledge, the transfer of which provides for intellectual capital formation. Intellectual ability is the prerequisite for distribution of intellectual labor, intangible assets and acts as a basis for intellectual property obtaining.

Table 3. Key features of social capital, authors' development

Key Features	Authors
Public good	G. Koalman (2001)
Membership in a particular social network (structure)	G. Koalman (2001)
Social nets (networks)	N. Gavkalova (2007), T. Kaynova (2011), R. Putnam (1993)
Social norms, rules, beliefs and trust	N. Gavkalova (2007), T. Kaynova (2011), G. Koalman (2001), R. Putnam (1993)
Conditions for coordination and cooperation	R. Putnam (1993)
Increase of return on investment in physical and human capital	R. Putnam (1993)
Group resources	P. Bourdieu (1993)
Reduction of transaction costs	P. Bourdieu (1993)
Increase of company profits	P. Bourdieu (1993)

Organizational culture is considered by many researchers through intellectual capital, but it helps create the most positive microclimate in a team, which directly affects social capital formation. Client assets reflect favorable relations with consumers. In fact, a company can get additional income in its form of direct (sales increase) or in the form of opportunity costs (reduction of fines) interacting with all its stakeholders: customers, suppliers, intermediaries, investors, lenders and community. Thus, client capital is an exogenous form of social capital as described above. This a is relationship is between intellectual and social capital. The image of a company as a part of intellectual capital is a reflection of the combined results from its interaction with the environment. So it is another aspect of exogenous social capital.

Summarizing all the relationships we can draw the following conclusion. Firstly, synthesized capital is predominantly intangible form inseparable from employee carrier. The second conclusion is that the primary source of its formation is investing in staff development and health, support of its performance at a high level. A product produced by a company, is created by a man. Thus the primary one is human capital, each element of which is an integral part of an individual. Intellectual capital as opposed to human one can have a form not directly tied to a man.

The third conclusion is about intellectual property, knowledge bases and information networks, structural capital and artificial intelligence. Social capital serves as a "mediator" between employees in their collaboration, providing knowledge transfer and creating "credibility". It increases the positive effect from spreading innovations that are based on the formation and use of intellectual capital that is the essence of the fourth result.

To prove the systemic nature of synthesized capital let us focus on the properties of a system.

The key features here are integrity and indivisibility. The system is primarily a holistic set of elements. This means that, on the one hand, the system is a holistic union, and on the other – it is composed of separate integral objects (elements) that can be easily singled out. But not the components form a whole (system), it is the separation that shows system components (Sharapov et al., 2003). This feature is confirmed by the density of connections between the components of synthesized capital subsystems.

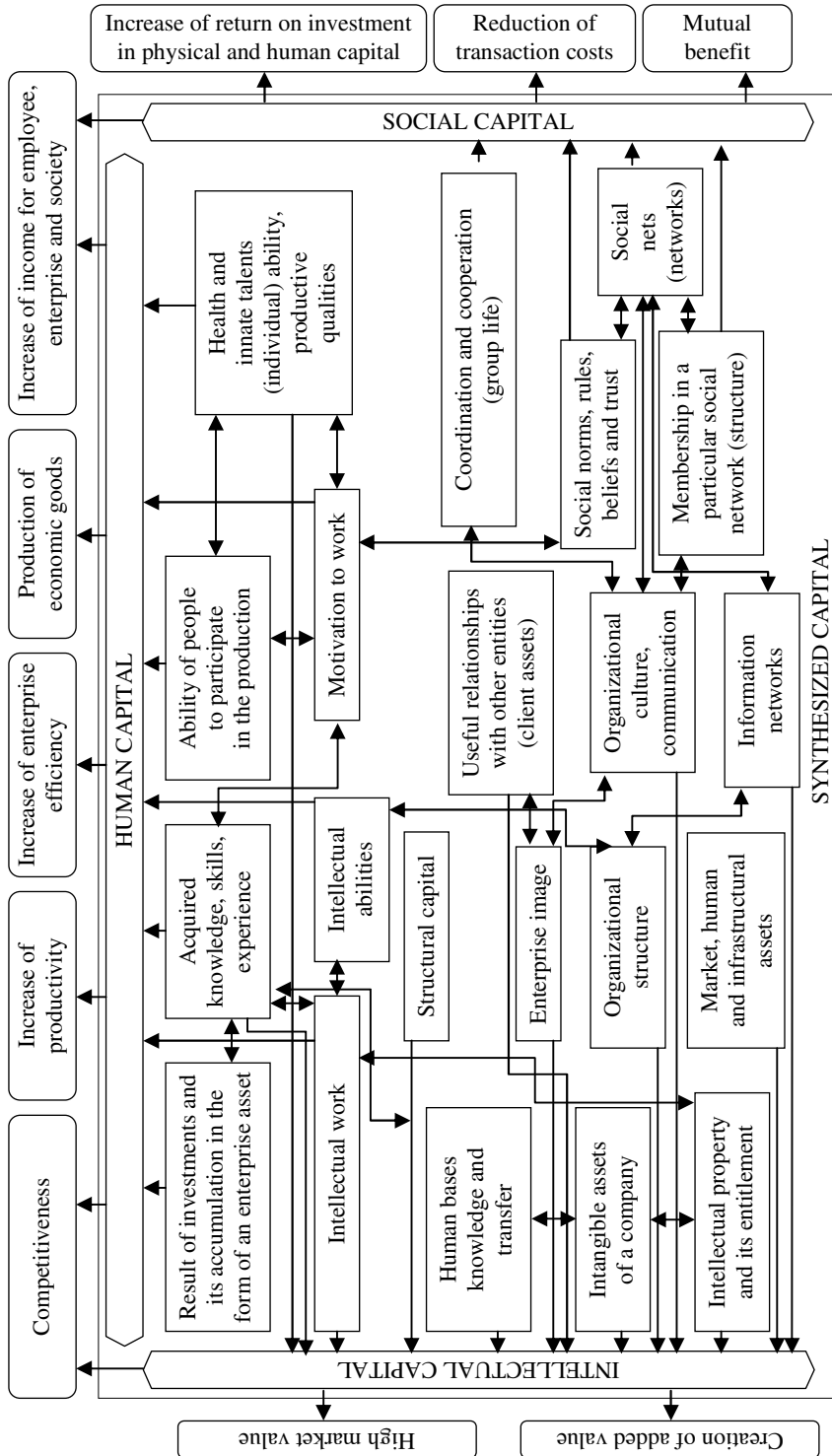


Figure 1. The structure of synthesized capital, authors' development

**Nonadditivity of a system.** Although system properties depend on the properties of its elements, but not completely (Sharapov et al., 2003). If we consider capital as a synthesized "abovesystem" in relation to its components – intellectual, social and human ones – than synthesized capital must have completely new qualities that are missing in its components, and appear due to the connections between them. Only due to these links the transfer of each component properties (subsystem) to other components (subsystems) takes place. O. Amosov and N. Gavkalova (2013) propose the creation of conditions for transforming the synthesized capital into geo-economic capital of a country. Consequently, the possibility for transformation of synthesized capital at meso- and macro levels is a fundamental quality that is not inherent in each type of capital that forms it. This quality advocates an integrated property system. Thus, systemic interactions of intellectual, social and human capital provides the appearance of new functional properties typical for synthesized capital and are the properties of higher level than the properties of each capital type.

Emergence is the result of a dispute between elements of the so-called synergy relationship. The essence of this effect lies in excess of total efficiency over the functioning of individual parts of a system (its subsystems). Synergy research of synthesized capital is the direction for further scientific developments, but it can be argued that only a comprehensive use of potential of human, intellectual and social capital will provide additional income to both employees and company as a whole.

The next property is hierarchical system – the subordination levels of system structure can be illustrated as "synthesized capital – intellectual capital – intellectual property and rights to it – intellectual property – copyright".

The other two properties – the interdependence between a system and the environment and the level of independence and transparency of a system – reflect the interaction with environment. Synthesized capital is an open system, which communicates with the environment: staff receives new knowledge, new patents and inventions, new communication means. Instead, a measure of autonomy of synthesized capital is very small, because some elements of capital are essential to a man as its carrier but he can receive capital properties only with the help of an enterprise. Thus, we can distinguish a fundamental triangle – Figure 2.

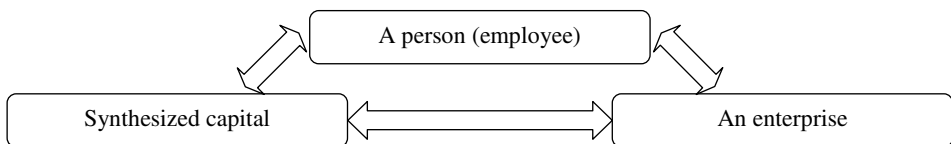


Figure 2. Triangle: "A man (employee) – An enterprise – Synthesized capital", authors' development

**Conclusions.** The purposefulness of a system reflects the presence of its goals. Taking into account high complexity of a system we can speak about the goal set as a "tree of objectives". At the lowest level there are the goals presented Figure 1 and reflecting the objectives of individual subsystems of synthesized capital. Unity of study objectives, creation and use of intellectual, social, and human capitals lie in considering a man as the key factor in the development of individual, company and economy in general: accumulation of knowledge towards building innovation-orient-

ed economy and the highest known level of society – knowledge economy. This serves as the goal of the highest order, at which the efforts of all subsystems should be aimed.

Thus, the systematic basis for synthesized capital, which includes human, intellectual and social capitals as subsystems, their relationships and interactions with the environment, has been proposed here for consideration in the complexity of their relations.

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